REMARKS

Office action summary. The Examiner has rejected claims 1-3, 5-8, 10, 11, 27-36, and 39 as anticipated by U.S. Patent No. 4,552,751 ("the '751" or "Inaba"). The Examiner has also rejected claims 1-41 as obvious over U.S. Patent No. 5,800,832 ("the '832") in view of the '751, and has rejected claims 42-53 as obvious over the '832 in view of the '751 and U.S. Patent No. 5,891,453 ("the '453").

The rejections are overcome by the amendments made in this response and otherwise traversed.

Claim amendments. Claims 1 and 50 are amended to strike the word "optional" before "active agent." No new matter is added.

Anticipation rejection. Claim 1 reads as follows:

1. (Currently amended) A composition comprising:
(a) a hydrogel comprising:
(i) a water-swellable, water-insoluble polymer;
(ii) a blend of a hydrophilic polymer with a complementary oligomer capable of hydrogen or electrostatic bonding to the hydrophilic polymer; and
(iii) an ~~optional~~ active agent; and
(b) a backing member, where the backing member is comprised of a polymer composition that erodes in a moist environment at a slower rate than the hydrogel.

The '751 reference does not disclose, at a minimum, a hydrogel comprising the elements (i), (ii), and (iii) recited in the claim.

The '751 patent discloses a composition having two different kinds of layers. See, e.g., '751 claim 1. According to the claim, the "drug storing layer" comprises (a) one of HPC, PVP, and HPMC plus (b) a plasticizer, and (c) the drug. The " drug controlling layer" comprises these things plus cellulose acetate or a vinyl acetate resin. (HPC = hydroxypropylcellulose, PVP = polyvinylpyrrolidone, HPMC = hydroxypropylmethylcellulose.)

In the last office action (hereafter "Action") the Examiner writes: "the other layer [disclosed in the '751 reference] comprises hydroxypropyl cellulose or ethyl cellulose, which reads on the erodible backing layer [sic]." Action at 3. Thus, the Examiner appears to be identifying the backing member recited in claim 1 with the "drug controlling layer" of the '751.

However, elements (a)(i), (ii), (iii) in instant claim 1 do ***not*** read on the '751's "drug storing layer." In the "drug storage layer," there is no water-swellable, water-insoluble polymer

as required in element (a)(ii) of present claim 1. HPC, PVP, and HPMC are not water-swellable water-insoluble polymers as required by elements (a)(i), (ii), (iii) of the instant claim 1.

To get around this, the Examiner says that cellulose acetate qualifies as a water-swellable water-insoluble polymer. However, cellulose acetate is not mentioned in the '751 application as a candidate for the drug storage layer. It is only mentioned as a candidate for the drug controlling layer, in claims 1, 5, and 9 and in Example 2. This may be ascertained by full text search for "cellulose acetate" in the application. Because claim 1 as amended requires that that element (iii) – the active – be present in the hydrogel with the water-swellable water-insoluble polymer, the anticipation rejection of claim 1 is incorrect.

Independently of the preceding, the "drug controlling layer" of the '751 is not really a backing member as persons of skill in the art understand that term. In fields of endeavor discussed in the present application such as tooth whitening and wound dressing, the backing member is one that lies behind the drug-containing layer which is adhered to a body surface. In contrast, a drug release controlling layer like that of the '751 patent is understood to be one that lies between the drug reservoir and the body surface and controls the rate at which the drug passes to the body surface. This is not merely an "intended use" distinction between the two types of layers, but rather a distinction that is important to designers because the characteristics of the two types of layers have to be quite different (e.g., a backing layer is not required to control the release of drug at all, a backing layer may be called upon to provide mechanical strength so the composition is retained for an appropriate period of time).

Obviousness rejections over the '832 in view of the '751. The Examiner finds that claims 1-41 are obvious over the '832 in view of the '751. This combination fails to establish a prima facie case of obviousness for at least the following reasons.

A prima facie case of obviousness requires, inter alia, that "there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." MPEP §2142.

The Examiner acknowledges that the limitation "a complementary oligomer capable of hydrogen or electrostatic bonding to the hydrophilic polymer" of claim 1 is not met in the '832 reference. (Action at 5-6.) No surprise here: a complementary oligomer as claimed would tend

to[1] produce a hydrogel (at least with PVP), and that is one thing that the '832 patent definitely does not want as discussed below. (Another limitation of the current claims which is not disclosed in the '832 is "a hydrogel.") Given this deficiency in the '832, the Examiner looks to the laundry list of plasticizers in the '751, which has some overlap with the list of possible complementary oligomers in the present application. The Examiner states that plasticizers "have the advantage of providing soft flexible film," so one of skill in the art would wish to add one to the '832 for that reason. (Action at 7.)

This reasoning is not well taken. Plasticizers that can actually serve as complementary oligomers in the sense of claim 1, establishing the hydrogen or electrostatic bonds recited in the claim, will tend to produce a gel, which the '832 patent teaches away from. There is also no indication that the '832 patent actually wants or desires a soft flexible film. Rather the '832 patent seems to be content with the softness and flexibility which is achieved when the disclosed device is put in place: "Water absorption softens the device quickly, diminishing and eliminating the foreign body sensation." '832 col. 5, lines 16-18. There is no other reference to softness in the '832 patent's description of its invention. The Examiner's stated reason to combine the '832 with the '751 is therefore not legally appropriate.[2]

The Examiner responds that "one having ordinary skill in the art would have been motivated to combine the references because it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention." Action at 11 (citing *In re Oetiker*, 977 F.2d 1443 (Fed. Cir. 1992)).

In this passage, the Examiner is confusing two legal doctrines. There is a legal doctrine of analogous art, which is what *Oetiker* was concerned with (see MPEP § 2141.01(a), which is entitled "Analogous and Non-Analogous Art," citing *Oetiker*). If a reference is not analogous art, it can for that reason be excluded from consideration altogether. MPEP § 2141.01(a); *see*

1. Whether a hydrogel would actually result would depend on the exact proportions of the complementary oligomer and any hydrophilic polymer with which it can form hydrogen or electrostatic bonds.
2. The Examiner also reasons, citing '751 col. 4, lines 28-37, that a plasticizer would "eliminat[e] the disadvantage of physical properties at the administration site by enhancing the release properties of the active agent." (Action at 7.) This reasoning is also not well taken for reasons discussed in the prior response, which is incorporated by reference herein. In short, the cited passage of the '751 does not say what the Examiner reads into it.

also, e.g., Wang Laboratories Inc. v. Toshiba Corp., 993 F.2d 858, 863-64 (Fed. Cir. 1993) (affirming finding that a reference in the field of computer memory modules for industrial controllers was non-analogous art in relation to a claim to computer memory modules for personal computers, and thus unavailable).

There is an independent legal doctrine of motivation to combine. *See, e.g., Cordis Corp. v. Medtronic AVE, Inc.*, 511 F.3d 1157, 1172 (Fed. Cir. 2008) (approving a jury instruction stating that "[i]f the prior art references as a whole do not teach, suggest or motivate that combination, then they may not be combined. The mere fact that the prior art can be modified does not make the modification obvious unless the prior art suggests the desirability of the modification."). A motivation to combine is still needed (at least in unpredictable arts) even if a reference is analogous art. Analogous art and motivation to combine are two different doctrines.

Not only is there no motivation to combine the '832 with the '751, but the combination of the two is actually forbidden by the doctrine of teaching away. "It is improper to combine references where the references teach away from their combination." MPEP § 2145.X.D.2.

Claim 1 recites a hydrogel. The '832 expends close to half a column of text to explain why gels are a bad idea. We read there:

> Bioadhesive carriers are known in the art and include gels, pastes, tablets, and is [sic] films. These products, however, *may lack one or several of the preferred characteristics* for an efficient and commercially acceptable pharmaceutical delivery device. . . .
>
> Bioadhesive gels which are used for application to mucosal tissues and especially the oral cavity are known in the art. . . . However, this type of pharmaceutical carrier has a *very limited residence time*, given that body fluids such as saliva quickly wash it away from the treatment site.
>
> Unlike bioadhesive gels and pastes known in the art, which have a *very limited residence time*, given the tendency of bodily fluids such as saliva to wash away the gel from the treatment site, the present invention offers an increased residence time because of its filmy consistency and components. A typical residence time for an aqueous gel or paste, such as Orajel®, Orabase®, or Kanka® is a few minutes. *This short residence time is a consequence of a limited or poor adhesion.* In a typical aqueous gel, the mucoadhesive components are either in solution, suspension, or swollen. Once applied to the mucosal surface, however, the water based gel does not instantaneously penetrate the lipophilic mucosal surface. The composition and water affinity of these gels results in a tendency to quickly mix with the saliva, rapidly pulling away the different components of the gel, and limiting the residence time. . . . The present invention, by its solid form and its instantaneous adhesion to the mucosal surface, allows a lasting contact . . . . Dissolution kinetics in the saliva and other aqueous media are influenced by the physical state of the

> device. While a gel or solution will readily mix with saliva and/or other bodily fluids, a solid form such as a crystalline, film, or precipitate of the same or similar composition is expected to dissolve more slowly.

'832 patent, col. 1, lines 24-28, 41-43, 47-50, col. 4, lines 4-31 (emphasis added). The "lasting contact" of the invention of the '832 patent is here sharply contrasted with the "very limited residence time" and "limited or poor adhesion" obtained with a gel.

This is a very strong teaching away from the use of gels. The '832 patent itself compares gels with the invention and finds them undesirable, inter alia, because of their "short residence time" and "limited or poor adhesion." "It is improper to combine references where the references teach away from their combination." MPEP § 2145.X.D.2. Here, the combination claimed by applicants comprises a hydrogel (which will generally be a gel when in a moist environment), while the '832 teaches away from the use of gels. The combination is thus improper.

Claim 1 also requires that the backing layer dissolve more slowly than the hydrogel. The '832 teaches the ***exact opposite***: "the adhesive layer, which is closest to the treatment site . . . will have a slower dissolution time, given that the backing layer protects the interior, adhesive layer and *will dissolve first*." '832 col. 5, lines 33-36. Thus, the '832 is also teaching away from backing members that dissolve more slowly that the interior layer by point out the disadvantage that a more slowly dissolving backing layer will not "protect[] the interior." That too implies that the '832 and '751 cannot be combined.

To the principle of teaching away, the Examiner argues "the disclosed examples and preferred embodiment do not constitute a teaching away from a broader disclosure or nonpreferred embodiments." This may be legally correct, but it is not apposite to the present situation. A teaching away occurs when the reference *deprecates* and *points out specific disadvantages* of following a particular path, here the use of gels and of slower dissolving backing layers. That teaching away is present here in the '832 patent, and the legal doctrine that forbids obviousness rejections over references that teach away from the claimed invention applies fully.

Dependent claims. With respect to certain dependent claims, the Action reasons (p. 6) that "The specific cellulose esters claimed by claims 3 and 11 and the materials of the backing claimed by claims 12-14 do not impart patentability to the claims, absent evidence to the

contrary." This is legal error. The Office is required to show that the claims are unpatentable, or else allow them. See 35 USC 102 ("A person shall be *entitled* to a patent unless" certain conditions are met); *In re Glaug*, 283 F.3d 1335, 1338 (Fed. Cir. 2002) (Office "bears the initial burden of presenting a prima facie case of unpatentability"). The applicants are not required to provide evidence of patentability of the claims until the Examiner has made out a proper prima facie case, which is not the case here.

Obviousness combination adding the '453 patent. Because the '832 teaches away from the hydrogel limitation in the only independent claims 1 and 50, it certainly cannot be used to reject any claim, even if a third patent is added – the '453. The Examiner's sole reasoning for making the three-patent combination is "the combined teachings of US '832 and. US '751 desired to deliver active agent to the mucus membranes and also provided enhanced delivery." This is a wholly generic justification applicable to mucosal delivery of any active with any system described in a patent. This is not the specific justification of why a combination would be made, which is legally required to make out a prima facie case of obviousness. See MPEP §2142.

Conclusion. It is hoped that the present response adequately explains why the Examiner's rejections are not well founded. If the Examiner has any questions about this response, it is respectfully requested that she telephone the undersigned attorney.

Respectfully submitted,

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